Table S1. Weather conditions in Saguaro National Park West, April–September 2023. Weather data were captured in five-minute intervals during diurnal survey periods (06:00–18:59) once per month. Values are means ±1 SD except for precipitation, which are sums.

Survey Month	Temp (°C)	Dew (°C)	RH (%)	Wind (m/s)	BP (mmHg)	Solar (w/m^2)	Precip (mm)
Apr	26.0 (±6.6)	2.3 (±1.9)	22.6 (±7.0)	1.8 (±0.5)	762.4 (±2.2)	579.3 (±361.3)	0
May	29.6 (±4.7)	9.8 (±2.7)	32.1 (±14.5)	1.8 (±0.6)	762.8 (±2.0)	641.9 (±360.2)	0
Jun	33.1 (±4.8)	4.6 (±2.3)	17.0 (±2.3)	2.3 (±0.9)	760.8 (±1.3)	609.5 (±344.4)	0
Jul	35.2 (±4.4)	16.8 (±0.5)	34.9 (±10.0)	2.2 (±0.7)	761.3 (±1.1)	435.4 (±287.4)	0.6
Aug	35.6 (±4.0)	20.3 (±0.5)	42.1 (±9.8)	1.5 (±0.7)	760.1 (±1.6)	567.1 (±332.1)	3.4
Sep	30.2 (±3.8)	20.7 (±0.5)	58.3 (±14.8)	1.6 (±0.7)	763.4 (±1.3)	527.8 (±332.8)	0

Table S2. Weather conditions during LSRT surveys for lizard observations (Obs) in Saguaro National Park West. Surveys occurred once monthly, April–September 2023. Weather data were captured in five-minute intervals. Values are means ±1 SD.

Hour	Obs	Temp (°C)	Dew (°C)	RH (%)	Wind (m/s)	BP (mm)	Solar (w/m^2)
06:00–06:59	29	21.8 (±5.9)	10.9 (±10.4)	54.5 (±24.7)	0.9 (±0.4)	763.2 (±1.3)	74.6 (±39.1)
07:00–07:59	142	24.5 (±5.2)	11.9 (±9.4)	48.7 (±19.6)	1.1 (±0.4)	763.2 (±1.3)	236.5 (±70.4)
08:00–08:59	253	27.1 (±4.7)	12.5 (±8.5)	42.8 (±17.0)	1.0 (±0.2)	763.2 (±1.3)	418.9 (±141.9)
09:00–09:59	239	29.3 (±3.7)	13.1 (±7.9)	39.5 (±16.5)	1.2 (±0.5)	763.2 (±1.3)	638.7 (±144.2)
10:00–10:59	249	31.1 (±3.4)	13.3 (±7.5)	36.3 (±15.2)	1.7 (±0.5)	763.1 (±1.5)	818.5 (±129.7)
11:00–11:59	141	32.4 (±3.2)	13.2 (±7.5)	33.4 (±14.1)	1.7 (±0.3)	762.7 (±1.9)	925.8 (±168.6)
12:00–12:59	147	33.5 (±3.3)	12.2 (±7.6)	29.3 (±13.3)	1.8 (±0.3)	762.2 (±1.7)	906.1 (±246.8)
13:00–13:59	73	34.8 (±3.4)	12.0 (±7.4)	26.8 (±11.6)	2.0 (±0.5)	761.3 (±1.5)	969.7 (±49.6)
14:00–14:59	92	35.5 (±3.4)	12.0 (±7.4)	25.9 (±11.4)	2.3 (±0.6)	761.1 (±1.3)	819.0 (±34)
15:00–15:59	87	36 (±3.4)	12.4 (±7.4)	25.7 (±11.0)	2.3 (±0.5)	760.3 (±1.4)	688.8 (±61.9)
16:00–16:59	118	36 (±3.6)	12.4 (±7.5)	25.8 (±11.0)	2.4 (±0.4)	759.6 (±1.6)	468.1 (±49)
17:00–17:59	131	34.8 (±3.1)	12.6 (±8.0)	28.8 (±14.5)	2.7 (±0.4)	759.8 (±1.0)	238.6 (±55.3)
18:00–18:59	70	33.7 (±3.4)	12.2 (±8.3)	30.4 (±16.3)	2.3 (±0.5)	759.8 (±1.0)	78.1 (±29.7)

Table S3. Interspecific multiple comparison matrix of climatic profiles for commonly encountered Sonoran Desert lizard species ($n \geq 20$). Test statistics (Z) and adjusted p-values are calculated via post-hoc Dunn's tests with Benjamini-Yekutieli (BY) adjustments to explicitly control false discovery rates under dependent covariate structures.

Response Variable	Species Comparison	*n*1	*n*2	Dunn Test Statistic (*Z*)	Adjusted *p*-Value (BY)	Significance
Mean Air Temperature (°C)	ASTI *vs*. CADR	102	824	2.550	0.0665	ns
	ASTI *vs*. DIDO	102	272	2.970	0.0209	*
	ASTI *vs*. GAWI	102	20	0.396	1.0000	ns
	ASTI *vs*. SCMA	102	218	−3.590	0.0030	**
	ASTI *vs*. UTST	102	301	−0.988	1.0000	ns
	CADR *vs*. DIDO	824	272	1.110	1.0000	ns
	CADR *vs*. GAWI	824	20	−0.756	1.0000	ns
	CADR *vs*. SCMA	824	218	−9.170	<0.001	****
	CADR *vs*. UTST	824	301	−5.660	<0.001	****
	DIDO *vs*. GAWI	272	20	−1.070	1.0000	ns
	DIDO *vs*. SCMA	272	218	−8.530	<0.001	****
	DIDO *vs*. UTST	272	301	−5.480	<0.001	****
	GAWI *vs*. SCMA	20	218	−2.260	0.1330	ns
	GAWI *vs*. UTST	20	301	−0.910	1.0000	ns
	SCMA *vs*. UTST	218	301	3.560	0.0030	**
Mean Relative Humidity (%)	ASTI *vs*. CADR	102	824	−1.190	0.9000	ns
	ASTI *vs*. DIDO	102	272	1.890	0.2640	ns
	ASTI *vs*. GAWI	102	20	−0.595	1.0000	ns
	ASTI *vs*. SCMA	102	218	3.340	0.0052	**
	ASTI *vs*. UTST	102	301	7.380	<0.001	****
	CADR *vs*. DIDO	824	272	4.930	<0.001	****
	CADR *vs*. GAWI	824	20	−0.092	1.0000	ns
	CADR *vs*. SCMA	824	218	6.900	<0.001	****
	CADR *vs*. UTST	824	301	14.400	<0.001	****
	DIDO *vs*. GAWI	272	20	−1.580	0.4760	ns
	DIDO *vs*. SCMA	272	218	1.990	0.2310	ns
	DIDO *vs*. UTST	272	301	7.480	<0.001	****
	GAWI *vs*. SCMA	20	218	2.340	0.1070	ns
	GAWI *vs*. UTST	20	301	4.290	<0.001	***
	SCMA *vs*. UTST	218	301	5.000	<0.001	****
Mean Solar Irradiance (W/m²)	ASTI *vs*. CADR	102	824	−0.257	1.0000	ns
	ASTI *vs*. DIDO	102	272	3.850	0.0006	***
	ASTI *vs*. GAWI	102	20	1.280	0.7710	ns
	ASTI *vs*. SCMA	102	218	−6.540	<0.001	****
	ASTI *vs*. UTST	102	301	−8.910	<0.001	****
	CADR *vs*. DIDO	824	272	6.780	<0.001	****
	CADR *vs*. GAWI	824	20	1.500	0.5550	ns
	CADR *vs*. SCMA	824	218	−9.950	<0.001	****
	CADR *vs*. UTST	824	301	−14.800	<0.001	****
	DIDO *vs*. GAWI	272	20	−0.582	1.0000	ns
	DIDO *vs*. SCMA	272	218	−13.600	<0.001	****
	DIDO *vs*. UTST	272	301	−17.500	<0.001	****
	GAWI *vs*. SCMA	20	218	−4.700	<0.001	****
	GAWI *vs*. UTST	20	301	−5.770	<0.001	****
	SCMA *vs*. UTST	218	301	−2.650	0.0366	*

Species abbreviations are: *Aspidoscelis tigris* (ASTI), *Callisaurus draconoides* (CADR), *Dipsosaurus dorsalis* (DIDO), *Gambelia wislizenii* (GAWI), *Sceloporus magister* (SCMA), and *Uta stansburiana* (UTST). Asterisks denote structural alpha levels (* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$, ns = non-significant).